ROLE OF CATTLE

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CONTENTS

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	Page
Importance of Cattle	1
Romance of Cattle	5
Romance of Cattle Excreta	11
Miracle of Cattle Excreta as Medicine & Chemical	15
Romance of Milk	25

ROLE OF CATTLE

IMPORTANCE OF CATTLE

There is growing feeling that due to shortage of food grain production and supply, cow has become competitor with human being and hence 'saving of human being' should be given first priority. The feeling of the people who consider themselves as generous is that instead of starving cow, as a matter of mercy, let it be slaughtered. The view of the Economic Experts are that the population of cow in India is too much which cannot be fed from the limited resources of the land, they are of too poor quality in milk yield as well as draught work and they are a burden on the society and the country and hence such stock which is useless should be eliminated by phased programme of slaughter, which will not only reduce the burden but will earn foreign exchange to the extent that will meet the entire defence expenditure of the country. Let us examine all these aspects patiently and impartially.

The Indian Council of Agriculture Research has observed in respect of necessity of cattle, as quoted on page 95 of the Report of the Cattle Preservation and Development Committee as follows :—

> "As has been rightly said the cow and the working bullock bear on the patient backs the entire structure of Indian Agriculture. Strangely enough, though unfortunately for the country, the Grow More Food Campaign, which has been in

operation for years now, has paid scant attention to the livestock aspect of food production. Till now, this campaign has been directed towards subsidised distribution of artificial manures, provision of tractors, improved seeds, irrigation facilities and so on. Valuable as these measures are, they cannot be effective or produce lasting results unless the basic needs of cultivation, which mean better bullocks and more milk, are provided. It is a matter of common knowledge that cattle can never be divorced from Indian Agriculture. **They are** indeed **the foundation on which Indian Agriculture is built and it hardly needs any stressing that the whole structure will fall down unless foundation is strongly laid.** No wonder therefore that the Grow More Food Campaign has not yet gained a proper foothold. Its success will indeed be a proportion to the part which cattle improvement plays in it. **Improvement of cattle** with the object of producing better bullocks and more milk **has, therefore, to be a vital part of our Grow More Food enterprise and should receive the highest priority.** Indian Dominion contains as many as 175 million cattle, (census) roughly a third of the world's total bovine population. They live under a variety of adverse climatic and other environmental conditions and it is a notorious fact that their efficiency in the production of both milk as well as draught cattle is almost the lowest in the world. **With centuries of neglect cattle improvement in India has now become the gigantic task.** The magnitude of the problem, however, should not deter us but on the contrary goad us to greater and concentrat-

> ed endeavour to tackle the problem with vigour and perseverance and on a scale compatible with its size and importance. Investigations so far conducted had made it abundantly clear that **Indian cattle do possess potentialities for increased production** but that their environmental conditions are such as do not permit the full expression and development of these inherent potentialities."

The Special Committee on Preserving High-yielding Cattle also observed in the first opening para of their report, as follows :—

> "From the earliest times cattle have always played a significant role in the country's economy. They have supplied motive power required for cultivation, for lifting water from wells, for transport needs in rural areas and for a variety of other purposes. They have provided milk and milk products for man's nutritional needs and also manure for our fields. **In the economy of the country, therefore, cattle have indeed been one of man's great benefactors.**"

Clarence H. Eckles, B.S.A., D.Sc., Late Chief, Division of Dairy Husbandry, University of Minnesota & Formerly Professor of Dairy Husbandry, University of Missouri in his book 'Dairy Cattle And Milk Production', published by The Macmillan Company, New York, 3rd edition, 1946 about the importance of Cow in agriculture has stated as follows :—

> "A large part of the best and highest priced agricultural lands of the world are utilized for the keeping of dairy cattle. It is a well-known fact that **the most prosperous nations, as well as the best developed physically and mentally, are those**

in which the dairy cow has long been the foundation of agriculture." (page 1)

"The most practicable means of keeping up the fertility of the soil is the use of farm manure, made possible by the keeping of a liberal number of live stock." (page 7)

"On the other hand, we find farms almost every locality—and even entire countries can be pointed out—where the fertility of the soil has been vastly increased by livestock farming."

(page 8)

Shri Satish Chandra Dasgupta, the first and best pupil of Late Dr. P.C. Roy, Calcutta, has written in 2 volumes the book 'The Cow in India', published by Khadi Pratisthan, Calcutta, in May, 1945. Mahatma Gandhi himself has written a 'Foreword' to this book, in which he has declared him as fit person to deal with the subject and has further stated that by convincing arguments, Shri Das gupta has dispelled the belief held even by learned men that India's cattle are a burden upon the land and divides its production with the people to the latter's detriment and has shown usefulness of the cow as (i) Giver of Milk ; (ii) Producer of draught bullock ; (iii) the manurer of our fields ; (iv) after death giver of her hide and bone, (v) has proved superiority of cattle over the engine for ploughing the fields of India and (vi) has also proved superiority of the cow over the buffalo.

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ROMANCE OF CATTLE

Romantic work done by Dr. Erhart Bartsch in 1928 in East Germany at a sandy place called Marienhohe proves that how a lifeless sandy waste can be converted into a health giving farm with cattle as the central figure as given on pages 21 to 27 of the book 'The Cow in India' by Shri Satish Chandra Dasgupta and also appeared in the magazine 'Indian Farming' in its May 1941 issue :

Description of Marien-Hohe—The experiment was conducted by Dr. Bartsch at Marien-hohe in East Germany, lying on a vast lake 100 miles to the south of the Baltic sea. The place was sandy and unfit for cultivation. Strong gales blow and the drying character of the atmospheric condition made the humus into bits which blow away before the gales. Rainfall is slight, being 13 to 14 inches yearly. Such was the force of the gale that blown sand clogged the plant and scoured the young shots away. *Marien-hohe passed from hand to hand of enterprisers who all lost money, being unable to make anything out of it.* In 1928 Dr. Bartsch took the farm. There were 150 acres of cultivable land and another, one-fourth of it, of grass land. It included fine wood also. The new owner decided to experiment on the farm in a new way, quite different from that of the previous owners who had brought down from outside whatever was considered to be necessary in the matter of manure and other requirements. *Dr. Bartsch set about to make the dead farm alive with the cattle only as its central figure.* He had a legacy of 13 heads of poor, sickly cattle infected with all sorts of diseases. There were cases of tuberculosis and of contagious abortion. Instead of selling off this heard and buying a new set of animals, the owner relying on the life-giving property of the soil under proper treatment, KEPT THIS HERD WHICH WAS AT THE TIME UNFRUITFUL TO THE EXTENT OF 70 PERCENT.

But sick though 70 percent of the 13 animals were, they were allowed to stay on to help the experimenter in seeing how they, these cows, the soil and the plants responded to the new treatment. So, the beginning was simply with these wrecks of cows and a promise not to bring anything from outside into the farm, but allow it to be developed as a self-contained unit.

Growing of Fodder—First Step—*The first care was to feed the cows and grow food for the cows and nothing else. The cows would give manure which, composted, would return to the soil and increase its productivity, giving yet better fodder.* This was the starting point.

Cereals were sown for their straw-fodder, and the sowing was interspersed with legumes and green fodder. Nearby was an unfruitful upland where the young animals pastured. Careful thought was given to the selection of tubers and roots for fodder. Potato was known to be a humus-devourer, and as there was not much humus in the soil, it was discarded in the beginning.

Legumes formed the standard fodder for rebuilding the health of the animals. *Manuring continued, and with better fodder-crops, better corn-crop followed,* *although occasional droughts brought all growth to a stand-still. Therefore, HEDGES AND TREES WERE GROWN TO WARD OFF THE SEVERITY OF GALES.*

Gradually peas, lentils, clover and lucerne became a part of the land which could not be previously grown there. According to Dr. Bartsch, all these were achieved by what he calls the bio-dynamic force. Intensive bio-dynamic manuring was carried on which consisted really of compost assisted by auxine preparations.

Bio-dynamic Method of Treatment—By bio-dynamics is meant the utilisation of the forces of living things, a balancing arrangement of plants, animals, birds and insects as found in the everlasting recurrence of the forest and the jungle in nature. Nature is copied and nothing is neglected. Bio-dynamic treatment also included careful composting, helped by special injections of rotted vegetable matter, believed to contain auxines or hormones. Some early growing crops were sometimes sprayed with a solution of these vegetable hormones.

Pastures were developed which grew lucerne. PASTURES WERE NECESSARY FOR THE HEALTH OF THE COWS—Some of the badly-affected cattle were destroyed in 1928. The rest showed the fine effects of the bio-dynamic method of treatment of the farm plants and animals, or the added natural forces of rejuvenation and health. The heard was given a variety of food grown on the soil.

Marked success followed rapidly, and the poorly cattle showed improvement and began to calve. Milk production increased astonishingly, and after some time the whole aspect of the farm was changed.

Fodder changed its character from coarseness to fineness and softness. The result was not brought about by the usual method of coarse dunging but by the use of predigested manner or compost. This compost was a fine material for reviving the soil to its ancient strength and giving life through it to plants and animals.

The land became a true home not only of the cows and their attendants but *a home for plants and birds and insects, every one working to help the common object of the blossoming forth of life.* Even some of the concentrates given to the cows were grown on the soil. There was an addition, later on, of forty to seventy swine which also received their food from the farm.

"It is always a cause of wonder how right actions work out in their varied way within one organism. If a farm is built up upon an insight into the natural dynamic happenings and living associations of various natural cycles, there is built up from within a powerful unity. (Dr. Wrench, Indian Farming, Dec. 1940).

This knowledge was applied to feeding and to the management of the cows. *The new heifers were surpassing their mothers in milking performance, and this was not due to feeding great and protein-rich quantities. but to the varied and general goodness of the foods.*

Now, there was over-flow of health and, therefore, over-flow of milk which was supplied to the neighbouring estates. The calves became objects of admiration to visitors and passers-by.

Unity of Animal, Plant and Soil—"*The facts stand before us like a miracle. Out of this sandy floor has come a fount of animal health. The one time sick heard has acquired a second health.*" There were qualities sleeping unrevealed in the sandy soil which came to life at the touch of the magician's wand of the scientific agriculturist *who believed in oneness of life, who believed in imitating nature and allowing nature to work in her own way for healthy and unhampered growth.*"

"The far-sighted believer in life forces attended to plant-growing, and the plants took upon themselves a new and lasting constitutional capacity."

"Scientific theory asserts that sandy soils are too lacking in acid calcium phosphate to serve animal breeding. This may well be so in the cause of those business farms where the unity of animal, plant and soil are not realized. We, fortunately, have been able to build up this unit out of the coarse and fine workings of nature inspite of the disadvantages of the climate and soil of Marien-hohe, and specially in view of the first four dry years of the new farm's existence, with its, at that time, poor supply of straw and the resulting stall-dung. *All the more astonishing it was that without any assistance from outside, without any chalk laid upon the fields and meadows, we got cattle with such strength of bone.* It was surprising to find that there was existing in the gravel itself an ideal and practical value quality." (Ib).

Use of Cosmic forces of Nutrition.—This value quality was developed and utilised at Marien-hohe. The quality passed on to the plants and thence to the animals and to the men living on those plants and their roots, tubers and cereals and also the milk of the cows. *The story of Marien-hohe is an illustration of the use of cosmic forces of nutrition brought to bear on soil plant, animal and man.*

What an enlivening picture the story of Marien-hohe creates ? *Cannot India under an Indian Dr. Bartsch and his inspirer Rudolf Steiner also accomplish miracle of Marien-hohe ?*

Dr. Werench in his article "Health Farmers and Doctors" in the indian Farming cited from some writings of the well-known farmer Sir Bernard Greenwell. "*A fertile soil means healthy crops, healthy animals and last and not the least healthy human beings.*"

> "Health is a whole. There is no separate human health, no separate animal, no separate vegetable, no separate soil health, and the way in which this whole can be got and maintained is that every living thing in it after its death should not be treated as waste but be returned to the soil. All dead animal and vegetable matter must be returned to the soil, so as to live again, if the whole or health of life is to be preserved. This is the first rule of life that gives to it wholeness holiness and health."
>
> (Indian Farming, May, 1941)

These writings make a refreshing reading as they bring back to India the faith which *Western influence-educated India seems to have lost, faith blooming forth in the eternal gardens of knowledge of the "Upanishads."*

(The Cow in India, Vol. I. page 21 to 27, by Shri Satish Chandrar Dasgupta of Khadi Pratisthan, Calcutta.)

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ROMANCE OF CATTLE EXCRETA

AS MANURE—In Mahabharat, Anushasan Parva Chapter 82, it is stated that Lakshmi (Goddess of Wealth) took her abode in and identified herself with cow's dung and urine. This is agro-economical truth.

The cattle population in 1966 (as per the cyclostyled statement issued by the Economics & Statistics Directorate of Ministry of Food, Agriculture, Community Development & Co-operation) are given below. These figures relate to 'Tenth All India Livestock Census, 1966', which took place on 15-4-1966 in case of all the States except Jammu & Kashmir and West Bengal in which case dates of reference of the census are 15-11-1966 and 15.4.1967 respectively. Composition of the figures was completed on 15.8.1968.

Cattle Adult Males	... 732.90 lakhs
Cattle Adult Females	... 546.60 lakhs
Total adults	... 1279.50 lakhs
Young stock of cattle	. 480.30 lakhs
Grand total	1759.80

*Converting the young stock into adult, we may take 480.30 lakhs young stock of cattle =160.10 lakhs adult cattle.

(*Basis:—Excreta from 3 Nos. of young stock can be taken as equivalent to excreta from one adult cattle on the basis of 'Cattle Equivalence Scale of Livestock Feed for different types of Animals' given on page 91 of the book 'Basic Facts about Cattle Wealth and Allied Matters' by Harbans Singh & Y. M. Parnekar)

Total population of adult Cattle=1279.50+160.10 lakhs=1439.60 lakhs.

From average adult, we get manure as follows:—

AVERAGE QUANTITY OF MANURE PRODUCED BY AN ADULT ANIMAL PER ANNUM IN CASE OF CATTLE

	Total Quantity produced (pounds)	Quantity of dry matter (Pounds)				
		Organic matter	Nitrogen	Phosphoric acid	Potash	Total quantity
Dung	10,950	1,752.0	27.375	10.950	16.425	2,190
Urine	5,475	401.5	54.750	1.095	37.595	511
Total	16,425	2,153.5	82.125	12.045	54.020	2,701

(Source : page 149 of the Basic Facts about Cattle Wealth and allied Matters by Harbans Singh and Y. M. Parnerkar published by Central Council of Gosamvardhana, New Delhi.)

Based on the above, we get total manure per year as follows from 1439.6 lakh living cattle as long they are kept alive:--

	Per cattle in Ponds	Total from 1439.60 Lakh living adult catttle	
		in lakhs. lbs.	in lakh M. Tonnes.
Organic matter on dairy basis	2153.5	31,00,178.600	1,405.980
Nitrogen	82.125	1,18,227.150	53,620
Phosphate	12.045	17,339.980	7.860
Potash	54.020	77,767.190	35.720

The monetary value of this total annual manurial yield from living cattle based on price prevalent in first quarter of 1969 would be as follows:—

	Quantity Tonnes in lakhs	Price per Tonne Rs.	Total Value Rs. in Crores
Organic matter on dary basis	1,405.980	2.00	28.1196
Nitrogen	53.620	2,510.00	1,345.8620
Phosphate	7.860	2,700.00	212.2200
Potash	35.270	837.00	295.2099
		Total :	1,881.4115

MIRACLE OF CATTLE EXCRETA AS MEDICINE & CHEMICAL

Quoted from 'Cow Protection in India' by L. L. Sundara Ram, M. A., Fellow of the Royal Economic Society (London) published by The South Indian Humanitarian League, Madras, in 1927.)

URINE—Our sacred text always make urine play an important part in ablutions. Thus, the urine of the cow is one of "those six excellent productions of the cow which are always propitious." (Institutes of Vishnu, by Jolly Julius, xxiii, 58-9. S. B. E. Vol. VII, page 105) "In the urine of the cow dwells the Ganges." (Ibid. Verse 61, Ibid).

The reason for this wide-spread use of urine is not far to seek. "Mutra (urine) would appear to be a very useful agent according to the Hindus, and has a very wide application. Cow's urine is used both internally & externally. It is prescribed in colic and other diseases" (A Short History of Aryan Medical Science by Sir Baghavat Singh Jee, published by Macmillan & Co. (1896), pages 132-133). "Cow's urine is used extensively in purifying metals. In purifying tin cow's urine is an useful solvent." (Ibid page 140).

In the purging of "the impurities of ores, whether superficial or inseparably combined with them," cow's bile and urine are invaluable (Kautilya's Arthasastra, translated by Dr. R. Shama Sastri, 2nd Edition, 1923,

p. 93). "Permanent softness (mrdu stambha) is also attained when the metal is treated with the powder of cow's teeth and horn." (Ibid). Kautilya mentions the various uses to which cow dung and urine can be put in the purification of metals. (Ibid. Book II, Chapters XII and XIII). We are not justified in regarding all these practices as crude and utterly visionary, if we are to remember the modern methods of medicine and metullurgy. Modren science is unfolding to us the merits of these practices of our ancestors.

DUNG—Likewise is the case of cow-dung. John Lockwood Kipling says as under ('Beast and Man in India—A popular treatise of Indian animals and their relations with the people, published by Macmillan & Co., 1892, 2nd edition, page 149):—

> "The rustic pharmacy of most countries knows the value of the substance as a poultice, but in India the sanctity of the cow lends a semi-sacred sanction to its use, and its application has the prestige as well as the mechanical attraction of a cataplasm."

This statement is fully justified in the light of our Dharmasastras. According to the Institutes of Vishnu by jolly Julius, xxiii. 56. S. B. E. Vol. VII, page 105: "A house is purified by scouring it with a broom and plastering the ground with cow-dung, and a manuscript or book by sprinkling water over it. Land is cleansed by plastering with cow-dung."

In Aryan medical science, cow-dung plays an important part, "PURISHA (dung) of a cow is applied. to parts of the skin that may be inflamed or discoloured It is occasionally given inside. In India it is used for plastering the walls, and is spread on floors under the impression that it possesses disinfecting quailties." (A Short History of Aryan Medical Science by Sir Baghavat Singh Jee, published by Macmillan & Co. (1896) page 134). Cow-dung is extensively used in India. AS A POULTICE IT IS MOST FAMOUS AND EFFICACIOUS.

"Cow-dung ashes are blanche pearle and the raw substance is the ordained cosmetic of the Hindu devotees." (Beast and Man in India, by L. Moresby. The Jaina Gazette, Vol. XXI, No. 7. July 1925, page 150).

Cow-dung is used invariably in plastering the walls and floors of an Indian home. This is universal in the rural parts of India, even though, in the urban areas, owing to the impact of western civilization and higher ideas of decency, it is generally abandoned in favour of white-washing. It is an effective agent as a bactericide and prevents infection, as we shall presently see in the light of western clinical research. Says Lockwood Kipling (Ibid.) :

> As a cement, cow-dung takes a high place as the finishing coat of the floor and the mud-wall. This coating is renewed at frequent intervals, and periodically applied to earthen floors. During the process of smearing the odour is somewhat strong, but this passes away in an incredibly short time, leaving an undeniable impression of coolness, freshness and, strange it may seem, fragrance."

This opinion is endorsed by another weighty authority from the west who says ('Studies in Indian Life and Sentiment' by Sir Bampfylde Fuller, K. C. S. I., C.I.E., London, published by John Murray, 1910, page 151) :

Indian houses are kept beautifully clean. Floors and walls are plastered from time to time by the women with a mixture of cow-dung and mud, which for the purpose is much more efficient than it would appear."

We need not comment upon this unqualified testimony of pronounced authorities and we have to only regret that our contemporaries in the west are required to show us the proper paths of appreciation of our hoary practices.

UTILITY OF UREA—We will now pass on to the results of the investigations of western scientists which justify in full measure the sanity of our ancient forefathers in emphasising the importance of urine and cow-dung for internal as well as external application. Professors Symmers of Belfast and Kirk of Ulster conducted a series of experiments twelve years back upon the clinical values of urea, and crystallised their investiations to the amazement of the western medical world and to the gratification of us, sons of the Aryan line, to whom those results were long familiar, but requiring ampler exposition from a scientific point of view. They conclude their investigations with seven principles underlying the utility of urea (The Lancet. 4th December 1915. Article on 'Urea as a Bactericide and its Applicotion in the treatment of wounds, by W. St. C. Symmers, Prof. of Pathology, Queen's University, Belfast; and T. S. Kirk, Principal Medical Officer, Ulster volunteer Force :—

"1. From our laboratory and clinical tests, we conclude that urea as antiseptic acts in the presence of blood.

2. That it is innocuous to animal tissues.
3. That in the quantities that can be used in wounds it is non-toxic.
4. That by its use at least half the labour necessitated by other methods of treatment is saved.
5. That during its use, the processes of repair are not at all retarded.
6. We believe that the most striking results will be obtained by its use as a first-aid dressing.
7. It prevents suppuration arising in wounds from chronic blood infections."

Prof. Symmers during the course of the article observes :

> "Thus in urea we have a substance which in the dry state is pronouncedly stable, which is practically non-poisonous, and which even in low concentration (3 per cent) affects the growth of bacteria.. ...and which is markedly bactericidal to nonsporing bacteria in the higher percentages. This bactericidal effect is active in the presence of blood and such like organic fluids."

Another set of experiments performed by Drs. Crawford, Hamilton and McIntosh of America has proved quite recently the use of urea as a diuretic in advanced heart failure. Before summing up their investigations, it is only proper for me to mention the practice enjoined by our ancestors of making an extensive use of PANCHAGAVYA which contains milk, urine, dung, sour-milk. butter and Gorochana (a pigment prepared out of the bile and urine of a cow). in the course of their experiments the learned doctors say (quoted in the Antiseptic, edited by the Hon'ble U. Rama Rao and U. Krishna Rao, Madras, March 1926, Vol. XXIII. No. 3, pages 168-169) :—

> "Urea was given with a view to re-establishing a normal water-balance by maintaining an adequate urine output, and also when slight oedema has collected to bring about its removal."

The following passage brings out the unfailing efficacy of urea in advanced cases of heart failure."

> "As soon as the administration of urea was stopped, the urinary output immediately fell and the clinical condition became worse. When treatment was resumed an improvement again took place. The increase in urine output varied with the dose and followed closely by the curve of urea excretion. With continuous administratlon, the daily volume was maintained at almost constant level."

The article concludes :—

> "by suggesting that urea is a useful drug in cases of heart–failure with oedema in which the treatment of the cardiac condition has failed to remove the oedema or maintain an adequate water excretion."

VACCINATION WITHOUT CRUELTY—I have now only to treat of vaccination and conclude this chapter. The Sardar Saheb of Gondol writes (A Short History of Aryan Medical Science, by Sir Baghavat Singh Jee, published by Macmillan & Co. 1896, page 179) :

> Inoculation for small-pox seems to have been known from a very early age. Long before Edward

Jenner was born, certain classes in India, especially cow-herds, shepherds, chamars and the like had been in the habit of collecting and preserving the dry scabs of pustules. A little of this they used to place on the forearm, and puncture the skin with a needle. In consequence of this inoculation the classes are supposed to have enjoyed a certain amount of immunity from small-pox."

Dr. Huillet, late of Pondichery, assures us that 'Vaccination was known to a physician, Dhanvantri who flourished before Hippocratus.'

In preparing the lymph used in inoculation case of small-pox, a toll is levied on the cow-life in India. My friend Dr. K. Doraiswami Naidu, the local veterinary officer at Masulipatam, informs me that the cows selected for the purpose of extracting the lymph do not thrive well after the process of operation is undergone. The outer portion of the abdomen of the selected cow-calf is first of all shaven, and the small-pox bacilli injected into its system. The pustules develop on the prepared portion of the belly and from them lymph is extracted. After this, it is confined to refrigerent rooms. It is then packed, after a process of purification, into tin tubes and is thus made available for public use. This cumbrous process, while causing pain both to the animal and to us who will have to get inoculated by means of punctures on the fore-arm IS INVOLVING AN APPRECIABLE TOLL UPON COW LIFE IN INDIA.

But, thanks to Prof. Besredka of the Pasteur Institute, Paris, this toll upon cow-life is taken away at the present day. He conclusively proved that immunity is a local thing in the case of small-pox.

Inoculation by puncturing the fore-arm is quite unnecessary and the circulating system as a whole need not be disturbed. The usual process of obtaining lymph may well be abandoned.

"The new method of Prof. Besredka suffers from none of the disadvantages, since the immunising agent contained in tabloid form, is taken through the mouth, has no utoward reactions, and is perfectly safe for infants, invalids and the aged. At present the injection of dead culture into the blood-stream is intended to induce a general immunity, but the Besredka theory is this : that as all invading micro-organisms have a selective affinity for some particular organ, so there should be a definite protective vaccine for each organ. Thus he found out that dysentery and cholera bacilli make their way straight to the intestinal wall; a rabbit was inoculated with these bacilli through a vein in its ear, and was killed five hours later. The autopsy showed all the bacilli on the intestinal wall they had made their way there as fast as they could, disdaining all other homes. All that is necessary then to immunise against dysentary or cholera is to immunise the intestinal wall, since this is the only organ open to attack and the best way of immunising it is by the most direct route, that is through the mouth. But there was difficulty in the way for the dead bacilli in the tablet could not find their way through the wall at all times. Only and when there was a free excretion of bile was ingress possible. Prof. Besredka's solution to this difficulty was to include in the tabloid a certain position of synthesised bite to act as a sort of key to the gates on the wall of the intestine." (Kalpaka : The Psychic Review of the East. Article on 'Vaccination through the mouth', April 26, 1926, Vol. XXI No. 4, pages 159-60).

This is only a recent discovery and has just made its way into india. Modest quantities of Prof. Besredka's tabloids are now being used. Popularising of this harmless kind of treatment would remove the strain put upon the life of the cow as entailed by the ordinary methods of obtaining vaccine, and thus prove to be an asset to India as far as the cattle of the country are concerned.

ROMANCE OF MILK

Quotations from 'DAIRY CATTLE AND MILK PRODUCTION' 3rd edition 1946, by Clarence H. ECkles, B. S. A., D. Sc., Late Chief, Division of Dairy Husbandry University of Minnesota; Formerly Professor of Dairy Husbandry University of Missouri, published by The Macmillan Company, New York.

Wonderful Ability of Cow—The special value of the cow as a domestic animal arises from her ability to consume and digest large quantities of roughage and to convert it into milk suitable for the digestion of man. (page 13)

Dairying Business—One of the advantages of dairy farming which appeals to the farmer—especially a farmer with limited capital—is the quickness and the certainty of the returns. The dairy cow gives an immedate return and her product is always marketable. There is little of the element of speculation in this line of farming. The returns, while not large at any one time, are steady throughout the year and may be depended upon. The market price of dairy products varies on the whole less than almost any other class of farm products. (pages 13 and 14)

Milk as Food.—From the earliest historical times, all civilzed nations have used milk and its product as food. It has long been observed that mankind seems to have a natural craving for milk, which is especially noticeable when completely deprived of milk and dairy products for several months. Its importance as a food for infants is also generally recognized.

Proteins from grains and vegetables are somewhat lacking in quality and their deficiencies are best made up by the use of some animal protein. Of all animal proteins, those of milk are the best adapted for making up what is lacking in a ration largely composed of cereals. This is true for animals as well as for man—as is illustrated by the remarkable results of adding skim milk to a grain ration received by pigs or fowls.

The second remarkable discovery that greatly emphasizes the value of milk as food was that of the vitamins. These substances. of which at least fourteen have been discovered so far, are necessary either for the growth or other functions of the young and for the well-being of mature humans and animals. They are produced primarily by plants, from which source man and animals must get them directly or indirectly. Four or five of the more important vitamins are found abundantly in milk, and many of the others to a lesser degree. One of these, vitamain D, is being added by various procedures to an increasing bulk of market milk. No other single food contains so many of the known vitamins, so that man has come to depend largely upon milk and dairy products for several of these indispensable substances.

A third great advance that has been made in the knowledge of nutrition concerns the mineral requirements. It has long been known that certain minerals are necessary for both man and animals Only in recent years. however, has the extent to which man and domestic animals suffer from a deficiency of certain minerals been recognized. Lime is the subtance most often lacking, athough phosphorus—and at times iodine—are also consumed in too limited quantities.

Milk is an especially good source of lime and phosphorus.

McCollum says, "Milk is the great factor of safety in making good the deficiencies of the grains which form, and must continue to form, the principal source of energy in our diet. Without the continued use of milk, not only for feeding of our children but in liberal amounts in cookery, we cannot as a nation maintain the position as a world power to which we have arisen."

The experience of mankind for thousands of years has shown the absolute need of milk in the diet. One of the best known authorities on human nutrition said "Without milk the white race cannot survive." Furthermore, the reasons why milk is an absolute necessity in the human diet are now understood and, as a result, the consumption of dairy products in the future is certain to increase. **It is also shown that the cow returns more human food from a given amount of feed than any other domestic animal.** (pages 5, 6 & 7)

Quotations from 'The Miracle of Milk' by Bernarr Macfadden, 'Father of Physical Culture' and 'Founder of Leader Cosmopolitan Church & Fellowship' author of Encyclopedia of Health, Home Health Library, Strengthening the Eyes, Hair Culture, After 40 what ? and other works on health, published in India by Jaico Publishing House, Bombay.

Cow's milk best milk—My own experience inclines me to believe that, whenever it is possible to secure it, the best milk, either for the 'milk cure' or for general uses is good, clean milk, unaltered in any way since coming FROM THE COW—free from the addition of any preservative substances, and untampered with in any respect. (page 45)

Perhaps the most eloquent tribute that has ever been paid to milk and to the source from which it is secured is the tribute from Gov. Frank O. Lowden of Illinois, in a pamphlet issued by the Illinois Department of Agriculture : THE COW IS A MOST WONDERFUL LABORATORY. She takes the grasses of the pasture and the roughage of the field and converts them into the most perfect food for man. In that food there is a mysterious something which scientists have found essential to the highest health of the human race which can be found nowhere else. Men have sought for centuries the fabled fountain of youth. The nearest approach to that fountain yet discovered IS THE UDDER OF THE COW." (pages 72 & 73)

Food value of milk—Indeed, the food value of milk can hardly be over-estimated. This may be better visualized by remembering that a quart of milk equals in food value three-quarters of a pound of beefsteak, two pints of oysters, eight eggs, two pounds of chicken, three-fifths of a pound of pork chops, or three pounds of fresh codfish. (p. 17)

When we grasp the significance of these facts we can readily understand that it is more milk, rather than more meat, that the people need......Milk is an invaluable food, and every means, NOT EXCLUDING THE TOTAL ELIMINATION OF MEAT AS FOOD should be adopted to increase its use. I have no doubt that our devotion to the fleshpots is the greatest single factor in the present restricted use of milk, which is the most unfortunate phase of our dietetic habits. (page 18)

In fact, so convinced am I of the value of MILK BOTH AS A FOOD AND AS A MEDICINE, that I am willing to go on record as stating my belief that, without a doubt ninety percent of all the malnutrition among children everywhere could be cured if two quarts of milk a day were supplied to each child. (page 27)

This is a lesson every man, woman and child in this country should take to heart. It would mean an increase of millions of work-hours, 'and a longer, healthier and happier life for everybody, if they did. (page 27)

THAT FOOD IS BEST THAT PROVIDES THE MAXIMUM AMOUNT OF NOURISHMENT WITH THE LEAST EXPENDITURE OF DIGESTIVE ENERGY, and that creates the smallest amount of organic debris, and of the least harmful nature to be eliminated. (Page 29)

When you are furnished with this delectable fluid you need not bother about other nourishment. (preface page v)

Milk as medicine—the use of milk as a distinct curative agent dates from the very remotest period. (page 30)

The credit for popularizing THE USE OF MILK AS A MEDICINE, however, must be largely ascribed to Russian and German physicians. Many German dietitians were enthusiastic advocates of the 'milk cure'. One of the most famous of these, Prof. Bauer, says :

> "It is an indisputable fact that in certain diseases a methodical use of milk gives results such as can be accomplished by no other form of treatment."

Dr. Inozemtseff, as far back as 1857, published a work on 'The Milk Cure' in which he detailed successful results on upward of a thousand cases. (pages 30 & 31)

Diseases cured by milk—Milk is the greatest of all diet cures. It is already scientifically combined. (preface page v)

Dr. Philip C. Karell, in August 1866, published reports showing the successful use of milk in hundreds of cases of DROPSY, NEURALGIA, RHEUMATISM ASTHMA, DISORDERS OF THE LIVER, AND MANY FORMS OF MAL-METABOLISM He called attention to the fact that milk and chyle (the milky fluid found in the lacteal glands after the ingestion of food) had a great resemblance to one another. (page 31)

Dr. L Duncan Bulkley, head, of the New York SKIN and CANCER HOSPITAL, contends that milk can be absorbed from the lacteal glands directly into the blood.

It seems strange, in a way, that anything so simple and so lacking in mystery as milk should effect cures with such uniformity, and in grave disorders that have resisted the efforts of the most skilful medical men armed with the most heterogeneous assortment of drugs and poisons, and that it should be prescribed or even appreciated by so few physicians as it is. (page 31)

Yet, such is the case. By a means so simple that even a school boy could carry it out, thousands of people all over the country are now curing themselves of grave ailments—particularly of the chronic type—many of which have been PRONOUNCED INCURABLE BY EMINENT PHYSICIANS. (page 31 & 32)

There is hardly a disease of metabolic origin—which includes every possible disorder of digestion, assimilation and elimination—which cannot be materially helped and often completely cured by a properly taken 'milk treatment.' (page 32)

Also, MANY DISEASES supposed to be of germ origin, which can be self-limited through increasing the defensive powers of the body, ARE CURABLE BY THIS TREATMENT. Among the many disorders successfully treated are nervous troubles of all sorts—including INSOMNIA, NEURALGIA, NEURITIS, HEADACHE AND MIGRAINE, NERVOUS PROSTRATION AND NERVE IRRITABILITY ; ALSO GENERAL DEBILITY, AND STOMACH AND INTESTINAL INDIGESTION, AND THEIR RESULTING AUTOINTOXICATON; ULCER OF THE STOMACH and INTESTINES, ACID STOMACH, and DILATION OF THE STOMACH ; PROLAPSE OF THE STOMACH, INTESTINES, KIDNEYS, OR UTERUS ; PIMPLES, BOILS, CARBUNCLES, SALLOW, BLOTCHY COMPLEXION, ECZEMA DANDRUFF, ANEMIA, BILIOUSNESS, CATARRH OF THE AIR PASSAGES or OF THE DIGESTIVE TRACT, CONSTIPATION, CHRONIC DIARRHEA, and DYSENTERY, ASTHMA, HAY FEVER, HARDENING OF THE ARTERIES, PILES, CHRONIC APPENDICITIS, RHEUMATISM, ARTHRITIS AND LUMBAGO, HIVES, OVARIAN TROUBLE AND LEUCORRHEA, IMPOTENCE, LIVER TROUBLE AND GALLSTONES, BRIGHT'S DISEASE AND DIABETES, TUBERCULOSIS IN THE EARLY STAGES, AND NARCOTIC HABITS OF ALL KINDS. Also, in ABNORMAL BLOOD PRESSURE conditions, whether too low or too high, the milk diet works almost miraculously. (page 32 & 33)

Pateients suffering from anemia, auto-intoxication and many wasting disorders, who are almost invariably below normal in blood pressure, are benefited to an extraordinary degree. (page 34)

People who suffer from dropsy need not hesitate for a moment in adopting the milk treatment. For not-withstanding the apparent absurdity of adding three or four quarts of fluid to a system that seems to be already suffering from a super/abundance of it, the dropsical condition quite uniformly yields. (page 36)

A Dr. Donkin first employed the milk diet treatment for diabetes, fifty-five years ago. These patients were given as much as fourteen pints of milk daily. (page 39)

MALNUTRITION MAY BE THE RESULT OF any one or more of several conditions – inherited weakness, VACCINATION, SUPPRESION OF ACTUE DISEASE BY DRUGS, or CODDLING IN CHILDHOOD, A GROSSLY WRONG DIET LEADING TO CONSTIPATION AND DISTURBANCE OF THE VITAL FORCES OF THE BODY. Also to destructive habits which throw the chemical nature of the body out of normal equilibrium, or which directly injure nerves or tissues. (page 34)

John D. Rockefeller, the richest man in the world, advertised nearly thirty years ago and offered a million dollars for a new stomach. I never heard of any one accepting this offer, but a short time after that reports were frequently circulated of his interest in fresh air, outdoor life, golf, and at his greatly advanced age, it was, reported HE Lived EXCLUSIVELY ON MILK that he maintained his life to the great age he did because of this simple diet.

The milk diet, properly prepared for and properly used, is capable of bringing about miraculous changes in the physical organism. (Preface page V.)

It will undoubtedly give you more life while you live and it may add many years to your life. (preface page VI)

—J. DALMIA